

10S8W_1.5RP Series

10W - Single Output - Wide Input - Isolated & Regulated
 DC-DC Converter



DC-DC Converter

10 Watt

- ⊕ 2:1 wide input voltage range
- ⊕ Operation temperature range:
-40°C ~ +85°C
- ⊕ Isolation 1500VDC
- ⊕ High Efficiency up to 88%
- ⊕ Short circuit protection (SCP)
- ⊕ Input under-voltage and
over-current protection
- ⊕ Industry standard pin-out
- ⊕ EN62368 approved
- ⊕ RoHS Compliance

The 10S8W_1.5RP series is a family of high performed 10W single & dual output DC-DC converters with 2:1 input voltage. They feature efficiencies up to 88%, 1500VDC isolation, operating ambient temperature of -40°C ~ +85°C, input under-voltage protection, output over-current and short circuit protection.

They are widely used in applications such as medical care, industrial control, electric power, instruments, communications and other industries.



Common specifications

Short circuit protection:	Continuous, automatic recovery
Cooling:	Free air convection
Operation temperature range:	-40°C ~ +85°C
Storage temperature range:	-55°C ~ +125°C
Storage humidity range:	< 95%
Soldering resistance temperature:	300°C max, 1.5mm from case for 10 sec
Switching frequency:	PWM mode, 500kHz typ.
Case material:	Epoxy [UL94-V0]
MTBF (MIL-HDBK 217F):	+25°C: >1000 Khours
Weight:	5.5g
Dimensions:	22.00×9.50×12.00 mm

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (full load/no load)	12V				
	• 3.3V		777/35	796/50	mA
	• 5V		969/35	992/50	mA
	• Others		969/9	992/18	mA
	24V				
Reflected ripple current	• 3.3V		389/25	398/45	mA
	• 5V		474/25	485/45	mA
	• Others		474/9	485/18	mA
			50		mA
Surge voltage (1s max.)	• 12V	-0.7		25	VDC
	• 24V	-0.7		50	VDC
Start-up Voltage	• 12V			9	VDC
	• 24V			18	VDC
Under-voltage Protection	• 12V	5.5	6.5		VDC
	• 24V	12	15.5		VDC
Input filter	Capacitance filter				
Hot plug	Unavailable				
Ctrl (The Ctrl pin voltage is referenced to input GND.)	Module ON	Ctrl open circuit or connected to TTL high level (3.5-12VDC)			
	Module OFF	Ctrl pin connected to GND or low level (0-1.2VDC)			
	input current when switched OFF		6	10	mA

Example:

10S8W_1205S1.5RP

10= 10Watt; S8= S1P8; W4= wide input (4:1); 9-36Vin; 5Vout;
 S= Single Output; 1.5= 1600VDC; R= Regulated Output;
 P= Short Curcuit Protection

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output accuracy	5%-100% load			±1	%
Line regulation	Vin= min to max, full load		±0.25	±0.5	%
Load regulation*	5% to 100% full load		±0.5		%
Transient recovery time	25% load step change		300	500	µs
Transient response deviation	25% load step change • 3.3/5V • Others		±5	±8	%
			±3	±5	%
					%
Temperature drift				±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth • 3.3/5V • Others		60	120	mVp-p
			75	150	mVp-p
					mVp-p
Over current protection	Input voltage range	110	160	230	%/Io

* Output voltage accuracy for 0%-5% load is ±3% max.;

** Load regulation for 0%-100% load increases to ±3%;

*** 0%-5% load ripple&noise <300mV.

EMC specifications

EMI	CE	CISPR32/EN55032 (see EMC recommended circuit, ②)	CLASS B
EMI	RE	CISPR32/EN55032 (see EMC recommended circuit, ②)	CLASS B
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV
EMS	RS	IEC/EN61000-4-3	10V/m
EMS	EFT	IEC/EN61000-4-4 (see EMC recommended circuit, ①)	±2KV
EMS	Surge	IEC/EN61000-4-5 (see EMC recommended circuit, ①)	line to line ±2KV
EMS	CS	IEC/EN61000-4-6	3 Vr.m.s

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 second	1500			VDC
Isolation resistance	500VDC, input to output	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		1000		pF

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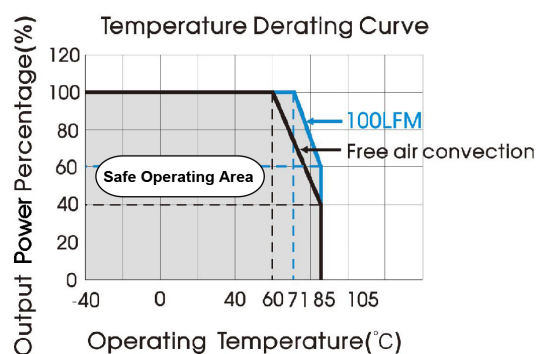
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Part Number	Input Voltage [VDC]			Output Voltage [VDC]	Output Current [mA, max.]	Efficiency** [%, typ.]	Capacitive Load [μF, max.]
	Nominal	Range	Max*				
10S8W_1203S1.5RP	12	9-18	20	3.3	2400	83	2200
10S8W_1205S1.5RP	12	9-18	20	5	2000	86	2200
10S8W_1209S1.5RP	12	9-18	20	9	1111	86	680
10S8W_1212S1.5RP	12	9-18	20	12	833	86	470
10S8W_1215S1.5RP	12	9-18	20	15	667	86	330
10S8W_1224S1.5RP	12	9-18	20	24	417	86	220
10S8W_2403S1.5RP	24	18-36	40	3.3	2400	85	2200
10S8W_2405S1.5RP	24	18-36	40	5	2000	88	2200
10S8W_2409S1.5RP	24	18-36	40	9	1111	88	680
10S8W_2412S1.5RP	24	18-36	40	12	833	88	470
10S8W_2415S1.5RP	24	18-36	40	15	667	88	330
10S8W_2424S1.5RP	24	18-36	40	24	417	88	220

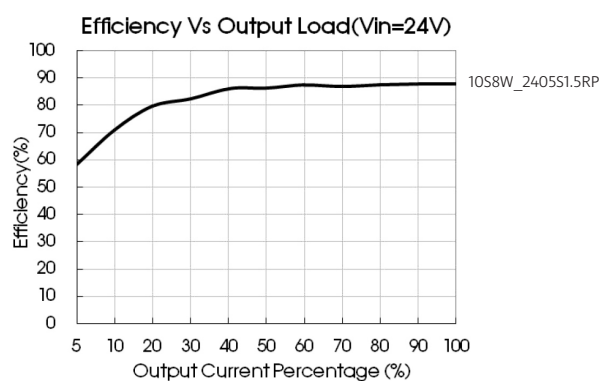
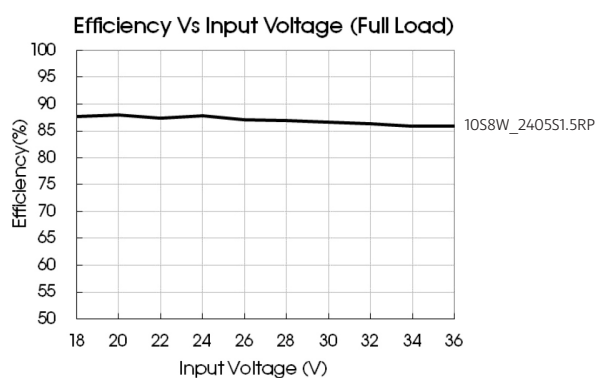
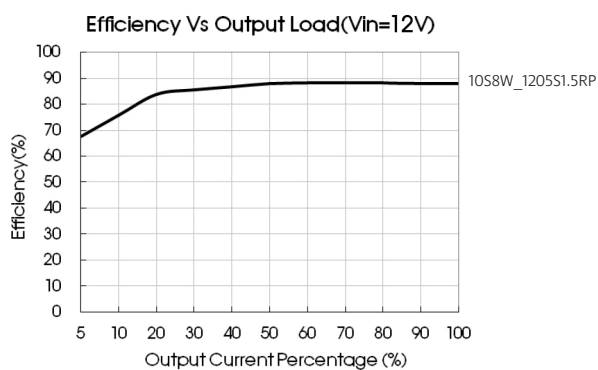
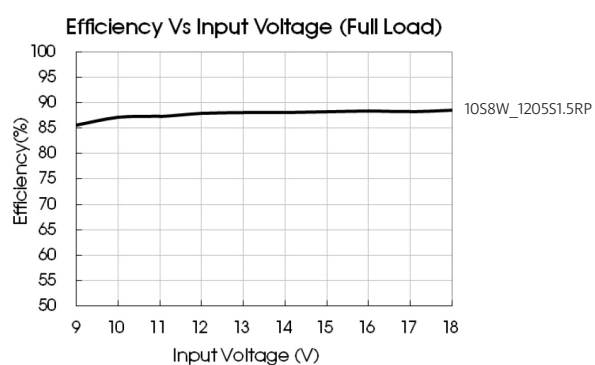
* Exceeding the maximum input voltage may cause permanent damage;

** Efficiency is measured at nominal input voltage and rated output load.

Typical characteristics



Efficiency

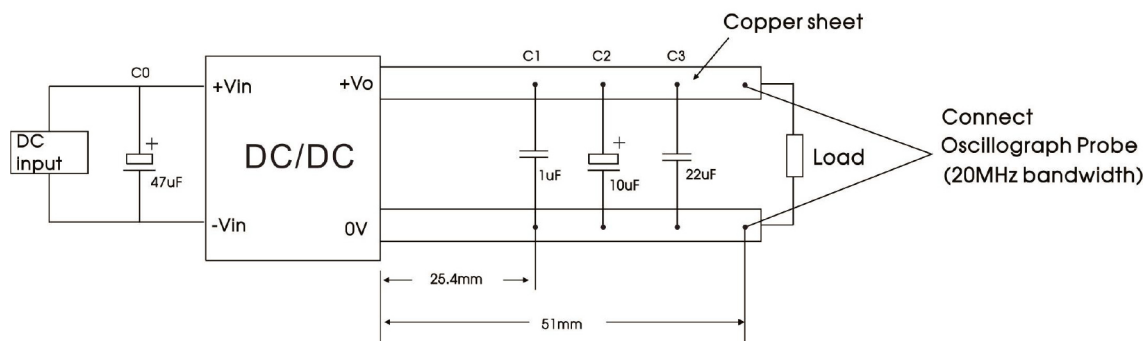


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Ripple & noise

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown below.
Please keep the wire of probe to copper as short as possible.



Ripple & noise

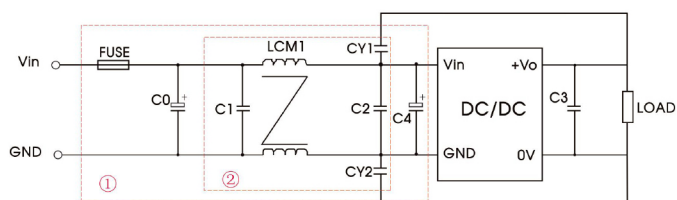
Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

Single



$C_{in}(uF)$	$C_{out}(uF)$
47	22

EMC solution-recommended circuit



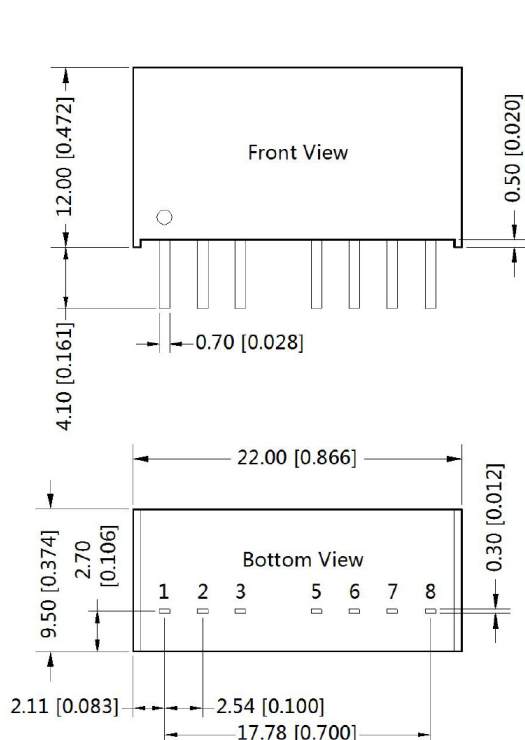
We use Part ① in Fig. 4 for EMC and part ② for emissions test. Selecting based on needs.

Model	Vin: 12V	Vin: 24V
FUSE	Choose according to actual input current	
C0, C4	330μF/35V	330μF/50V
C1, C2	10μF/50V	
C3	22μF/50V	
LCM1	1.4-1.7mH	
CY1, CY2	1nF/2000VDC	

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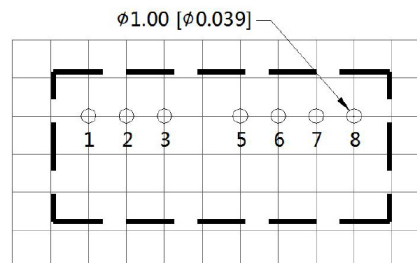
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Mechanical dimensions/footprint



Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

THIRD ANGLE PROJECTION



Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

NC: Pin to be isolated from circuitry

Note:

1. The maximum capacitive load offered were tested at input voltage range and full load;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see „Features“ and „EMC“;
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.